

IN THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application.

1. (Currently amended) A video moving object detecting method comprising the steps of:

a. determining whether a video signal in a predetermined unit area represents a background area or a non-background area from a reconstructed video signal acquired by decoding encoded data obtained by compression-encoding a motion video signal; and

a' b. detecting adjacent unit areas representing the non-background area using a determination result of the step a ~~determining to determine the adjacent unit areas as~~ an area of a moving object ~~from a result of the determination on whether said video signal represents said background area or said non-background area.~~

2. (Currently amended) The method according to claim 1, wherein the step a includes determining whether an interest macro block used as the unit area is a background macro block corresponding to the background area or a non-background macro block corresponding to the non-background area every frame, and the step b includes ~~determining a moving object on the basis of a determination result as a background in the step a~~ detecting adjacent interest macro blocks representing the non-background macro block as the area of the moving object.

3. (Original) The method according to claim 2, wherein the step a includes determining a background or a non-background every macro block in the frame on the basis

of decoded mode information, a first cross correlation value between a local decoded picture signal and a reference picture signal of a frame preceding by one frame, and a second cross correlation value between the local decoded picture signal and a background picture signal preceding by one frame.

Q 4. (Original) The method according to claim 3, wherein the step a includes determining the interest macro block as a background macro block when the first cross correlation value is larger than a first threshold

5. (Original) The method according to claim 3, wherein the step a includes determining the interest macro block as a non-background macro block when the second cross correlation value is larger than a second threshold, and as a background macro block when the second cross correlation value is not more than the second threshold.

6. (Currently amended) The method according to claim 2, wherein the step b includes removing as a noise a non-background macro-block, around which N macro-blocks ~~around which~~ all are ~~all still~~ determined as the background macro-block, ~~as a noise~~, and ~~determining~~ detecting as the moving object a smallest rectangle ~~enclosing an~~ area where non-background macro blocks are ~~present~~ adjacent to one another, on the basis of a ~~background/non-background~~ the determination result after the noise has been removed.

7. (Currently amended) A video moving object detecting method comprising the steps of:

a determining whether a video signal in a given unit area represents a background area or a non-background area from a reconstructed video signal acquired by decoding encoded data obtained by compression-encoding a motion video signal;

Q' b detecting adjacent unit areas representing the non-background area using a determination result of the step a ~~determining to determine the adjacent unit areas as an area of a moving object from a result of the determination on whether said video signal represents said background area or said non-background area;~~ and

c displaying information indicating ~~said~~ the area of ~~said~~ the moving object on a display screen for ~~said~~ the reconstructed video signal.

8. (Original) The method according to claim 7, wherein the step c includes combining information indicating the area of the moving object with the reconstructed video signal to obtain a combined video image, and displaying the combined video image.

9. (Currently amended) A video moving object detecting apparatus comprising:
a ~~background/non-background determining section which determines~~ determination unit configured to determine whether a video signal corresponding to a unit area represents a background area or a non-background area, the video signal being part of a reconstructed video signal acquired by a video decoder ~~section~~ which decodes encoded data obtained by compression-encoding a motion video signal; and

~~a moving object determining section which determines~~ detection unit configured to detect adjacent unit areas representing the non-background area using a determination result of the determination unit ~~an area of a moving object from a result of the determination done~~

by said ~~background/non-background determining section~~ for each unit area to determine the adjacent unit areas as an area of a moving object.

10. (Currently amended) The apparatus according to claim 9, which further comprises a first ~~cross-correlation~~ calculator which computes a cross correlation value between a current frame of the reconstructed video signal and a video signal preceding by one frame every unit area, a storage ~~section which stores~~ unit configured to store a background video signal corresponding to a background component of the reconstructed video, and a second ~~cross-correlation~~ calculator which computes a second cross correlation value between the current frame of the reconstructed video signal and the background video signal stored in the storage ~~section~~ unit every unit area, and the ~~background/non-background determining section~~ unit includes a section which determines whether the video signal in the unit area is a background area or a non-background area on the basis of encoding mode information obtained from the video decoder section, the first cross correlation value and the second cross correlation value.

11. (Currently amended) The apparatus according to claim 9, wherein the ~~moving object determining section~~ detection unit includes a ~~section which determines~~ unit configured to determine, as a moving object, an ambit including a plurality of unit areas determined as the non-background area and adjacent to one another.

12. (Currently amended) The apparatus according to claim 9, wherein the ~~background/non-background determining section~~ determination unit includes a ~~section which~~

~~determines unit configured to determine~~ whether an interest macro block corresponding to the unit area is a background macro block or a non-background macro block every frame, and the ~~moving object determining section~~ detection unit includes a ~~section which determines unit~~ configured to detect the moving object on the basis of a determination result as the background area.

Q' 13. (Currently amended) The apparatus according to claim 12, wherein the ~~background/non-background determining section~~ determination unit includes a first cross correlation calculator which computes a first cross correlation value between a local decoded picture signal and a reference picture signal of a frame preceding by one frame, a second cross correlation calculator which computes a second cross correlation value between the local decoded picture signal and a background picture signal preceding by one frame, and a ~~determining section which determines~~ determination device configured to determine a background or a non-background every macro block in the frame on the basis of decoded mode information, the first cross correlation value, and the second cross correlation value.

14. (Currently amended) The apparatus according to claim 13, wherein the ~~determining section~~ determination device includes a ~~section which determines device~~ configured to determine the interest macro block as a background macro block when the first cross correlation value is larger than a first threshold

15. (Currently amended) The method according to claim 13, wherein the ~~determining section~~ determination device includes a ~~section which determines device~~

configured to determine the interest macro block as a non-background macro block when the second cross correlation value is larger than a second threshold, and as a background macro block when the second cross correlation value is not more than the second threshold.

A 16. (Currently amended) The apparatus according to claim 12, wherein the ~~moving object determining section~~ detection unit includes a ~~section which removes~~ unit configured to remove a non-background macro-block, N macro-blocks around which are all still, as a noise, and a ~~section which determines~~ unit configured to detect a smallest rectangle enclosing an area where non-background macro blocks are present adjacent to one another, on the basis of a background/non-background determination result after noise has been removed.

17. (Currently amended) A video moving object detecting apparatus comprising:
a video decoder which decodes encoded data obtained by compression-encoding a motion video signal;

~~a background/non-background determining section which determines~~ determination unit configured to determine whether a video signal corresponding to a unit area represents a background area or a non-background area, the video signal being part of a reconstructed video signal acquired by ~~[[a]] the video decoder section which decodes encoded data obtained by compression-encoding a motion video signal;~~ and

~~a moving object determining section which determines~~ detection unit configured to detect an area of a moving object from a result of the determination done by said ~~background/non-background determining section~~ the determination unit for each unit area;
and

a display ~~section~~ which displays information indicating the area of the moving object, determined by ~~said moving object determining section~~ the determination unit, on a display screen for the reconstructed video signal.

A 18. (Currently amended) The apparatus according to claim 17, which further comprises a first cross correlation calculator which computes a cross correlation value between a current frame of the reconstructed video signal and a video signal preceding by one frame every unit area, a storage section which stores a background video signal corresponding to a background component of the reconstructed video, and a second cross correlation calculator which computes a second cross correlation value between the current frame of the reconstructed video signal and the background video signal stored in the storage section every unit area, and the ~~background/non-background determining section~~ determination unit includes a ~~section which determines~~ unit configured to determine whether the video signal in the unit area is a background area or a non-background area on the basis of encoding mode information obtained from the video decoder section, the first cross correlation value and the second cross correlation value.

19. (Currently amended) The apparatus according to claim 18, further comprising an update ~~section for~~ unit configured to, when the ~~background/non-background determining section~~ determination unit determines that the video signal in ~~said the~~ predetermined unit area of the reconstructed video signal represents a background area, ~~updating~~ update the background video signal stored in ~~said the~~ storage section with ~~said the~~ video signal in ~~said the~~ unit area which has been determined as representing ~~said the~~ background area.

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20. (Currently amended) The apparatus according to claim 17, wherein ~~said moving~~
~~object determining section~~ the determination unit determines, as ~~said the~~ the area of ~~said the~~
moving object, an area where a plurality of unit areas which have been determined as
representing a non-background area by ~~said background/non-background determining section~~
the determination unit are located adjacent to one another.
